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# Model Water Efficient Landscape Ordinance (MWELO) Update 2015 – Comments from The Lawn Institute

Regarding the proposed revisions to the California Code of Regulations Model Water Efficient Landscape Ordinance, the Board of Trustees of The Lawn Institute (TLI), a 503(c) organization dedicated to supporting turfgrass research and promoting the efficient management of turfgrass by consumers, offers the following comments.

The Lawn Institute supports the purpose of the ordinance, specifically:

> 4) that landscapes are essential to the quality of life in California by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost to development;
> 5) that landscape design, installation, maintenance and management can and should be water efficient…..

Some of the language in the draft ordinance update 2015 prescribes water use restrictions to a degree that contradicts the stated purpose. While TLI appreciates the need for reduced water consumption during this unprecedented drought, we suggest that the proposed revisions in the draft ordinance will have detrimental long-term consequences resulting in a reduced quality of life for California residents and exacerbating future droughts.

Research has demonstrated that turfgrass provides many environmental, economic, health and social benefits to communities that utilize it as a groundcover for home lawns, commercial and industrial landscaping, parks and recreational areas. Several of the proposed changes to the ordinance will negatively impact the ability of turfgrass to provide these benefits to California residents. TLI recommends the following changes to the language in the draft ordinance (TLI recommended language shown in green):

- Section 490(c)(2): Minimizing energy use by adopting efficient irrigation methods, recycling the nutrients in grass clippings by leaving them on lawns after mowing, and planting drought-tolerant vegetation, including climate-appropriate trees, plants and turfgrasses. Mowing height of turfgrass should be at the upper limit of recommended height with no more than 1/3 of the leaf removed during a single mowing.

- Section 490(c)(3): Conserving water by capturing and reusing rainwater and graywater wherever possible and selecting climate appropriate plants and

turfgrasses that need minimal supplemental water.

- Section 490(c)(4): Protecting air and water quality by ~~reducing power equipment use and landfill trips~~ encouraging the use of energy-efficient power equipment and reducing landfill trips by allowing grass clippings to remain on lawns after mowing, selecting locally sourced materials, and using mulch and efficient irrigation equipment to prevent erosion.

- Section 490(C) (5): Protecting existing habitat and creating new habitat by choosing ~~local native plants wherever possible and including~~ climate appropriate, ~~non-native plants when necessary~~ drought-tolerant vegetation recommended by a certified landscape professional or university Extension Specialist. ~~, and avoiding pesticides and invasive plants.~~

- Section 492.4(b)(1): The plant factor used shall be from WUCOLS. Plant factors may also be obtained from horticultural researchers with academic institutions, university turfgrass Extension Specialists, ~~or~~ nursery industry professional associations, or turfgrass industry associations as approved by the California Department of Water Resources (DWR). The plant factor ranges from 0 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, and from 0.7 to 1.0 for high water use plants.

- Section 492.6(a)(1)(A)(2.): selection of water-conserving plant and turf species, ~~especially local native plants~~ especially drought-tolerant varieties;

- Section 492.6(a)(1)(C): ~~Plants~~ Vegetation shall be selected and planted appropriately based upon ~~their~~ its adaptability to the climatic, geologic, and topographical conditions of the project site. To encourage the efficient use of water, the following is highly recommended:

- Section 492.16(d): TLI recommends adding the following language as a recommendation to improve on-site stormwater retention:
    - Incorporate turfgrass into green roofs to collect rainwater

- Section 492.17(b)(1): Signs shall be used to identify the model as an example of a water efficient landscape featuring elements such as hydrozones, irrigation equipment, and others that contribute to the overall water efficient theme. Signage shall include information about the site water use as designed per the local ordinance; specify who designed and installed the water efficient landscape; and demonstrate low water use approaches to landscaping such as using drought-tolerant turfgrasses, native plants, graywater systems, and rainwater catchment systems.

Additional comments:

- TLI recommends that the existing language in Section 490.1 remain unmodified.

- Section 492.4(c): TLI recommends that the ETAF remain at 0.7 and that the Additional Water Allowance for SLA remain at 0.5. The rates proposed in the draft ordinance (0.5 and 0.3, respectively) will make it challenging for any vegetation to survive, including native vegetation. Instead, the ordinance should incorporate expanded use of drought-tolerant turfgrasses (see "Drought-Tolerant Turfgrass Varieties" below).

- TLI recommends removing Section 492.6(a)(1)(D). Turfgrass has been proven to mitigate soil erosion and can help to prevent landslides (see "Water Quality and Soil Erosion Control, below). Dr. James Beard noted as far back as 1973 that "…soil is kept stabilized due to turf's high shoot density and extensive root mass." In more recent years, research completed by Dr. Beard and Dr. Robert Green noted "turfgrasses offer one of the most cost-efficient methods to control water and wind erosion of soil."

- TLI recommends removing draft Section 492.6(a)(1)(E), prohibiting the use of turfgrass in street medians. Turfgrass filters pollutants from the air, produces oxygen, cools the air and can slow automobiles when their brakes fail. The use of turfgrass as ground cover for medians should be encouraged.

- TLI recommends removing draft Section 492.6(a)(1)(F), prohibiting the use of turfgrass in parkways less than 10 feet wide. Turfgrass filters pollutants from the air, produces oxygen, cools the air and can slow automobiles when their brakes fail. The use of turfgrass as ground cover for parkways should be encouraged.

- TLI recommends maintaining the current language in Section 492.13(a). Requiring irrigation efficiency of 0.85 for residential areas and 0.92 for non-residential areas would make it difficult for even drought-tolerant native vegetation to survive. The current irrigation efficiency rate of 0.71 for both residential and non-residential areas lends itself to sustainable landscaping management when actively enforced.

TLI is confident that the proposed modifications (above) to the language in the current draft ordinance will provide the state of California and its residents with sustainable landscaping options that provide areas for active recreation while preserving natural resources.

Rather than permanently imposing severe restrictions on landscaping, we urge municipalities to enforce strict water-use limitations only during extended periods of extreme and exceptional drought.

The draft ordinance and the irrigation restrictions proposed will effectively prohibit the use of many common turfgrass varieties, including perennial ryegrass, Kentucky

bluegrass and creeping bentgrass which are important to the year-round health of landscapes. Furthermore, it will essentially restrict other turfgrass varieties to approximately 25 percent of residential landscaping and, because of the stricter water-use restrictions proposed for commercial, industrial and institutional properties, will realistically translate to no turfgrass being used to landscape those properties. **These restrictions will undoubtedly have the unintended effect of prolonging and worsening future periods of drought, increasing air temperatures in urban and suburban areas, decreasing air quality, and decreasing water quality.** They may also increase soil erosion rates, increase noise pollution and hasten the spread of wildfires since fewer square feet of turfgrass will be planted to mitigate these problems by serving as a fire barrier. We can cite numerous studies to support our arguments. Just a few studies that we urge you to read before taking action on this ordinance:

**Water Quality and Soil Erosion Control**

Turfgrass stands modify the overland flow of stormwater so that sediment runoff is insignificant in all but the most intense rainfall events.

- Gross, C.M., J.S. Angle, R.L. Hill, and M.S. Welterlen. 1991. Runoff and sediment losses from tall fescue under simulated rainfall. J. Environ. Qual. 20:604-607.
- Gross, C.M., J.S. Angle, and M.S. Welterlen. 1990. Nutrient and sediment losses from turfgrass. J. Environ. Qual. 19:663-668.
- "One of the key mechanisms by which turfgrasses preserve water is their superior capability to trap and hold runoff, which results in **more water infiltrating and filtering through the soil-turfgrass ecosystem**." (Beard, J.B. and Green, R.L. 1994. The Role of Turfgrasses in Environmental Protection and Their Benefits to Humans.
- "Perennial turfgrasses offer one of the most cost-efficient methods to control water and wind erosion of soil. Such control is very important in eliminating dust and mud problems around homes, factories, schools, and businesses. When this major erosion control benefit is combined with the groundwater recharge organic chemical decomposition, and soil improvement benefits, the resultant relatively stable turfgrass ecosystem is quite effective in soil and water preservation." (Beard, J.B. and R.L. Green. 1994. The Role of Turfgrasses in Environmental Protection and Their Benefits to Humans. Journal of Environmental Quality. 23:3.)

**Air Temperature and Air Quality**

Turfgrass sequesters carbon, traps dust particles and produces oxygen, cleaning the air. Lawns have been shown to reduce air temperatures around buildings and hardscapes from 7 – 14 degrees Fahrenheit through shading and evapotranspiration.

- Qian, Y. and R.F. Follett. 2002. Assessing Soil Carbon Sequestration in Turfgrass Systems Using Long-Term Soil Testing Data. Agron. J. 94:930-935.
- Hull, R. J., Alm, S. R., and Jackson, N.1994.Toward Sustainable Lawn Turf, in Handbook of Integrated Pest Management for Turf and Ornamentals.

- 1996 Maryland Turfgrass Survey. An Economic Value Study. Institute of Applied Agriculture. University of Maryland, College Park.

**Noise Abatement and Glare Reduction**

Turfgrass absorbs sound and reflected light, which helps to keep communities and urban areas quiet and comfortable.

- Cook, D.I., and D.F. Van Haverbeke. 1971. Trees and shrubs for noise abatement. Nebraska Agric. Exp. Stn. Res. Bull. 246, Lincoln.
- Robinette, G.O. 1972. Plants, people, and environmental quality. U.S. Dep. Interior, National Park Service, and Am. Soc. Land. Archit. Foundation, Washington, DC.

**Drought-Tolerant Turfgrass Varieties**

Dr. Kelly Kopp, Department of Plants, Soils & Climate, University of Utah, recently stated during an Alliance for Water Efficiency (AWE) webinar that by selecting and promoting drought tolerant turfgrass species and cultivars, water savings could be achieved even as the functional benefits of grasses in the landscape is maintained.

Based on the theory that turfgrass is traditionally over-watered, TLI is currently funding research in the area of turfgrass irrigation. The research is being led by Dr. John Stier, University of Tennessee, Institute of Agriculture and includes a team comprised of noted turfgrass researchers, including Dr. Kopp and Dr. James Baird, Department of Botany & Plant Science, University of California, Riverside. The primary objective of this project is to determine the actual amount of irrigation water needed to maintain functional turfgrasses in different regions of the country.

- **DT-1 Bermudagrass:** University of Georgia College of Agricultural and Environmental Sciences' turfgrass program is poised to release DT-Bermudagrass in 2015. DT-1 has proven to be drought- and wear-tolerant through more than two decades of research particularly in Texas and Oklahoma, where drought is a major concern.
- **Zeon Zosia:** Developed by David Doguet of Bladerunner Farms in Poteet, Texas, in collaboration with Milt Engelke, PhD, professor emeritus at Texas A&M University, Zeon Zosia uses between 30 and 40 percent less water and fertilizer, is drought tolerant and able to persevere through extreme conditions.
- **Delta Bluegrass:** Developed by Ed Zuckerman of Delta Bluegrass Co. in Stockton, California,Delta Bluegrass has brought to the market five blends providing 50 – 70 percent water savings. It is recommended that grass blades be allowed to grow to 18 inches, thus allowing for less frequent mowing.
- **DALSA 0605:** Dr. Ambika Chandra, a Texas A&M AgriLife Research Associate Professor of turfgrass breeding and genetics at the Dallas center, is leading efforts to develop a new St. Augustine hybrid which is expected to be commercially available in 2015. With the research partially funded by the Turfgrass Producers of Texas, this new turfgrass variety has shown excellent response to drought

stress in the field. Much of this is due to its long roots that allow it to penetrate deeper into the soil to obtain moisture where other varieties cannot. According to Dr. Chandra "It also does well during soil dry-down after exposure to extended periods without water, as well as in the recovery phase once water is reintroduced."

Several innovative companies offer warm-season, drought-tolerant turfgrass varieties. These include:

- **Sod Solutions, Mt. Pleasant, SC:**
  - Celebration bermudagrass
  - Discovery bermudagrass
  - Santee Centipede
  - Palmetto St. Augustine
  - Sapphire St. Augustine
  - Empire zoysia
- **DLF International Seeds, Halsey, OR:**
  - Garrison tall fescue
- **Grassland Oregon, Salem, OR:**
  - Memphis tall fescue
- **Landmark Turf & Native Seed, Avon Lake, OH:**
  - Maestro tall fescue
  - Reflection tall fescue
  - Regenerate tall fescue
- **Lebanon Turf, Lebanon, PA:**
  - Leonardo tall fescue
  - Michelangelo tall fescue
  - Rockwell tall fescue
- **Mountain View Seeds, Salem, OR:**
  - Ares tall fescue
  - Titanium 2LS tall fescue
- **Turf Merchants Inc, Tangent, OR:**
  - Traverse 2 SRP tall fescue

It is also critical to note that newly-installed sod requires different care than established turfgrass. TLI recommends that irrigation limits be suspended for a period of two weeks following the installation of new sod to ensure the long-term benefits of this resource can be fully realized (this is protected in the current draft of the ordinance under Section 492.7(a) "temporary irrigation solely for the plant establishment period").

**Respectfully submitted June 26, 2015**

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